Remarks for the Department of Treasury's Roundtable on the Budget, Taxes, and Economic Growth

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Politicians and academics alike believe that entrepreneurship is critical to the growth and dynamism of an economy. Accordingly, public policy debates around the world have focused on how entrepreneurship can be encouraged. Sooner or later, these debates come around to the subject of tax policy and how taxes affect entrepreneurial decision-making. However, historically, there has not been much research done on this topic. . For example, during recent debates on the President's proposals to cut taxes, policy analysts had access to a large corpus of research regarding the effects of taxes on hours worked by wage and salary employees. On the other hand, despite their importance to the economy, there is a paucity of comparable information regarding the impact of income taxation on entrepreneurial enterprises.

In recent years, a substantial amount of work has been done to remedy this deficiency. In a series of papers written with Robert Carroll (now the Treasury's Deputy Assistant Secretary for Tax Analysis), Douglas Holtz-Eakin (now the Director of the Congressional Budget Office) and Mark Rider, I have been part of this effort. Using confidential tax return data uniquely suited to studying the

impact of taxes on entrepreneurial enterprises[1], we examined how entrepreneurs' income tax situations affect the growth of their businesses, the amount of labor they hire, and the volume of physical investment they undertake. I'd like to take this time to tell you a little about this research and the conclusions we reached.

Data.

The data for these studies were drawn from a unique source, the Statistics of Income (SOI) Individual Tax Files for 1985 and 1988, which provide linked information on 62,159 taxpayers that are present in both years. These files contain detailed information on taxpayers' income and deductions taken from their individual income tax returns (Form 1040). Importantly, the two years of the panel bracket the enactment of a major piece of tax legislation, the Tax Reform Act of 1986 (TRA86). This fact was crucial to the statistical strategy employed to isolate the effect of taxes on entrepreneurial decision making.

I now turn to a data problem faced by every empirical researcher in this area: How does one make operational the notion of entrepreneurship? How do we know who is an entrepreneur? In the nonstatistical literature on this topic, entrepreneurs are characterized in terms of their daring, risk-taking, animal spirits, and so on:

> "To act with confidence beyond the range of familiar beacons and to overcome that [social] resistance requires aptitudes that are present in only a small fraction of the population and that define the entrepreneurial type..." (Schumpeter [1942], p. 132)

[1]The data were analyzed by Carroll and Rider, who were both duly authorized Treasury employees at the time the research was conducted..

Those who do statistical work must settle for observable (and hence, more prosaic) criteria for classifying someone as an entrepreneur. With tax return data, the most sensible proxy for "entrepreneurship" is the presence of a Schedule C in the tax return.[2]

Taxes and the Growth of Small Firms

As already noted, the health and vitality of entrepreneurial enterprises is a matter of substantial policy concern. In this context, a good deal of attention has been focused on the question of whether the tax system impedes the creation and growth of small firms. In Carroll, Holtz-Eakin, Rider and Rosen [2001], our goal was to isolate the effect of taxes among the many determinants of the rate of growth of sole proprietors' receipts.

Our starting point was the notion of the *tax price* facing an entrepreneur, defined as the proportion of the last dollar received by the entrepreneur that he or she gets to keep. This is just 1 minus the marginal tax rate. Now, the Tax Reform Act of 1986 led to lower marginal tax rates for many taxpayers. Our empirical model posited that the growth rate of receipts between 1985 and 1988 depended upon the change in the tax price due to TRA86 and other variables.

[2]The Characteristics of Business Owners data set created by the U.S. Census Bureau also uses a tax-based definition of entrepreneurship (see Holmes and Schmitz [1991]). However, these data characterize members of partnerships and Subchapter S corporations (from Schedule E) of the tax return as well as sole-proprietors as "entrepreneurs." The inclusion of a Schedule E on a tax return may be more reflective of tax shelter activity than entrepreneurship. In the context of this study, a practical advantage of a Schedule C criterion is that it provides information about certain inputs that is not available on Schedule E.

We allowed for the possibility that other variables affect growth as well. Age is related to one's experience in the job market and human capital accumulation. We also included marital status and the number of dependents, given the possibility that they may affect the entrepreneur's willingness to take risks and desire for leisure. We included capital income as a measure of the individual's assets, which should affect entrepreneurial decision making in the presence of the kinds of capital market constraints. Finally, using the principal business codes reported on Schedule C, we developed a set of dichotomous industry variables. These were intended to take into account industry-specific effects, such as the fact that demand patterns, the parameters of the production technology, and profitable opportunities differ across industries.

A big problem in this kind of research is that an individual's marginal tax rate depends on his or her behavior—the more she works, the higher her tax rate. This makes it difficult to sort out the direction of causality. The beauty of this data set is that it allows us to take advantage of tax variations generated by forces outside the individual's control—TRA86 itself.

The key result was that the greater the percentage increase in a sole proprietor's tax price between 1985 and 1988, the greater the increase in the size of his or her business. Specifically, our estimates implied that a decrease in a sole proprietor's marginal tax rate from 50 percent to 33 percent would lead to an increase in his receipts by about 28 percent. While "large" effects are in the eye of

the beholder, it appears that marginal tax rates have a substantial effect on the growth of entrepreneurial enterprises.

Taxes and Capital Investment by Entrepreneurs

Many policymakers believe that tax policy should encourage entrepreneurs to invest in their businesses. In particular, there are persistent concerns that high marginal tax rates discourage investment by entrepreneurs. Common sense suggests that one must take seriously the possibility that taxes on entrepreneurs discourage investment. Nevertheless, it is an empirical question whether or not this is the case. Interestingly, most of the voluminous econometric literature on taxes and investment focuses on aggregate business investment, or investment undertaken by large firms of the type represented (say) in the Compustat database.[3] There has been little systematic investigation of whether the tax system adversely affects entrepreneurial investment behavior. This is a significant omission given that entrepreneurial enterprises account for at least 10 percent of the U.S. economy's non-residential fixed investment.[4]

One way that an entrepreneur's personal income tax situation can affect capital acquisition decisions is through their impact on the "user cost of capital,"

[3]Chirinko [1993] provides an extensive survey of this literature.

[4]For purposes of this calculation, we viewed entrepreneurial enterprises as consisting of sole-proprietorships plus some partnerships, *S* corporations, and small *C* corporations. We were only able to calculate the sole-proprietors' investment outlays, which thus serve as a lower bound for the total. From the Statistics of Income 1993 individual sample, we added up the investments recorded by sole proprietors on Form 4562 (Depreciation and Amortization), and arrived at a figure of $63.3 billion. (This includes an estimate of investment that is expensed under Section 179.) This is 10.6 percent of nonresidential fixed investment in 1993, which was $598.8 billion, according to the *Survey of Current Business* (November/December) [1995]. Note, however, that the definition of investment in the National Income and Product Accounts is not quite the same as the tax definition. A reconciliation is contained in the *Survey of Current Business*.

defined as the gross internal rate of return required of an investment such that it yields the net market rate of return after all taxes and depreciation. The greater the user cost, the fewer the number of profitable projects. Hence, anything that drives up the user cost of capital reduces the amount of investment, and one such variable is the individual's marginal tax rate. The fact that changes in personal tax rates alter the user cost suggests that they may thereby influence investment decisions.

We used data from Schedule C to implement this framework. As in our analysis of receipts growth, we used multivariate analysis, and took advantage of the changes in tax rates introduced by TRA86. According to our estimates, we simulated the effect of raising the 1988 marginal tax rate of each individual in the sample by 5 percentage points. The mean probability of investment fell from 0.335 to 0.300, a decline of 10.4 percent. Using either metric, the estimates implied a substantial response of investment decisions to tax rates.

Investment Expenditures.

Thus far I have focused on the important issue of whether taxes affect the probability that an entrepreneur makes any investment at all. However, the tax return data also allow us to learn as well a bit about the impact on the size of investments. Specifically, with the supporting information associated with tax returns one can compute the dollar value of investment outlays in each year. Our statistical analysis of the expenditure data supported the notion that changes in the user cost and, thus, changes in tax rates have a statistically significant impact on

entrepreneurs' investment expenditures. Further, the quantitative impact is substantial. Our results implied that a five percentage point increase in marginal tax rates led to a 9.9 percent decline in the mean investment expenditures. In short, changes in the user cost of capital induced by increases in marginal tax rates have a substantial impact on entrepreneurs' investment spending.

Taxes and the Hiring Decision

One reason for the public fascination with entrepreneurial enterprises is their putative ability to "create" jobs. As Abraham Lincoln, another Republican President who cared about job creation, noted in 1861,

> "It is not forgotten that a considerable number of persons mingle their own labor with capital--that is, they labor with their own hand and also...hire others to labor for them."

But there is little research on the factors that determine entrepreneurs' hiring decisions. In particular, not much is known about the effect of an entrepreneur's personal income tax situation on his or her hiring decisions.

As in the studies of firm growth and investment previously discussed, we investigated hiring decisions using data drawn from the Statistics of Income Individual Tax files for 1985 and 1988.

Sole proprietors do not report the number of workers they employ on their Schedule C. However, they do report their wage bill.[5] Whether the wage bill is positive or zero tells us whether the entrepreneur hired any labor. Our main focus, therefore, was on the decision whether or not to hire labor. Changes in the wage bill itself are hard to interpret because one does not know if they are dominated by changes in wage per worker rather than the number of workers. Nevertheless, entrepreneurs' expenditures on labor inputs are of independent interest, so we also analyzed how the wage bill changed in response to tax rate changes.

We used a conventional statistical model to estimate how changes in the entrepreneur's tax rate affected the probability that she hired any labor. We found that the greater the decline in the tax rate, the more likely that she hired some labor. Specifically, we found that a 10 percent rise in the entrepreneur's tax price would increase the mean probability of employing labor from 0.215 to 0.241, or 12.1 percent, implying an elasticity of 1.21. It appears that marginal tax rates have a substantial effect on the propensity of entrepreneurs to hire workers.

The Wage Bill

As just noted, tax returns do not report the number of employees, but do include the size of the wage bill. Our analysis of the wage bill data using a multivariable strategy suggested that an increase in the entrepreneur's tax price of ten percent increased his wage bill by about 4 to 5 percent. As already noted, we

[5] The 1986 Tax Reform did not change the deductibility of the wage bill.

were unable to decompose this change into the part due to an increased wage rate and a part due to more labor hired. But one way or the other, when their income tax rates go up, entrepreneurs spend less on labor. Our data did not allow us to say anything about what kinds of workers are affected by such changes. However, to the extent that the earnings of their workers were affected, it raises the intriguing possibility that taxes on high-income entrepreneurs may be shifted in part to lower-income employees, leading to counter-intuitive effects on the distribution of after-tax income. This is another manifestation of a more general phenomenon that was stressed in our recent *Economic Report of the President*—the person who is legally responsible for paying a tax is not necessarily the one who bears the true burden.

Concluding Remarks

The papers that I have summarized today examined the impact of personal income taxes on three important decisions facing an entrepreneur: how fast to grow the firm; whether to invest in capital assets and if so, how much; and whether to hire workers. The short answer in all three cases is simple: taxes matter. As tax rates go up, entrepreneurial enterprises grow at a slower rate, they buy less capital, and they are less likely to hire workers.

These findings have implications for the ongoing debate over proposals to make the tax system more friendly to entrepreneurs. Broadly speaking, we can imagine two strategies. One is to target relief to the owners of small businesses with special provisions that apply only to them. While such provisions may have

their place, they have a variety of limitations. One of the most important is that, by definition, they do nothing for *potential* entrepreneurs. The other strategy is to cut entrepreneurs' marginal tax rates as part of a general program of rate reductions that would apply to all taxpayers. In contrast to targeted relief, general rate reductions require no special rules, and they encourage individuals who are not yet entrepreneurs but are contemplating starting their own businesses. Of course, general rate reductions have other beneficial effects that have nothing to do with entrepreneurship *per se*, e.g., enhancing efficiency in the deployment of capital and labor, reducing incentives for tax avoidance and evasion, and so on. But as the debate over making the President's tax cuts permanent moves forward, policymakers should not neglect that fact marginal rates cuts are an effective tool for creating an entrepreneur-friendly economic environment.